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FRONT COVER: *Rodeo, by L. Wilson (Nobel Division)*

OUR CONTRIBUTORS

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WHEN Wilton's youngest apprentice of today was five years old, the works were little more than a twinkle in the eye of the I.C.I. Main Board. Things have moved rapidly since then. More than 400 acres of sprawling Yorkshire moorland have yielded to the bulldozer; the Wilton skyline is now a space-fiction panorama of great chemical plants where more than 10,000 people work.

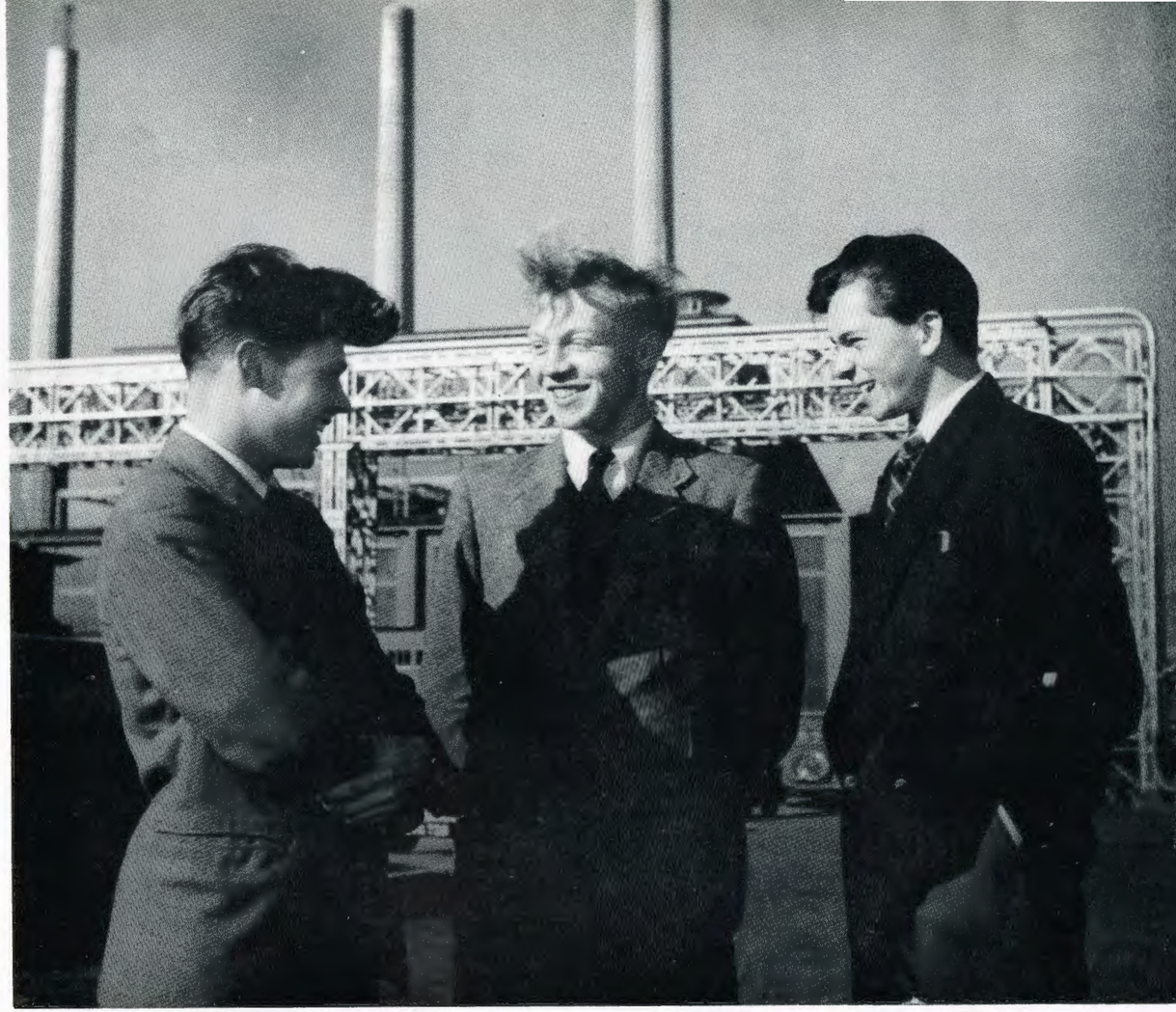
But the bulldozers are still busy, and many years will pass before Wilton's 2000 acres are fully developed. Before then a miniature army of craftsmen and draughtsmen must be recruited and trained to service the whole vast enterprise. That is why an apprentice training scheme was in operation at Wilton even before the first manufacturing unit. Why, too, the number of apprentices, already 400 strong, will rise progressively to more than 1000 as the demand accelerates.

Apprentice School

By Dorothy Thomas

Flexibility is the keynote of the Wilton apprentice scheme. Craft apprentices are given time to find their aptitude, and may even be selected to train as draughtsmen.

In the early days the Apprentice School was concerned only with training craftsmen—the fitters, electricians, instrument artificers and others needed to install and maintain production units. (Over a hundred have completed their indentures, and every man jack of them returned to Wilton after national service.) Now a second branch, smaller but equally healthy, has been grafted on to the original scheme. This is Student Apprenticeship—the plan under which trainees, while covering a lot of the same ground as their craft colleagues, spend more time at the drawing board and qualify ultimately as draughtsmen.

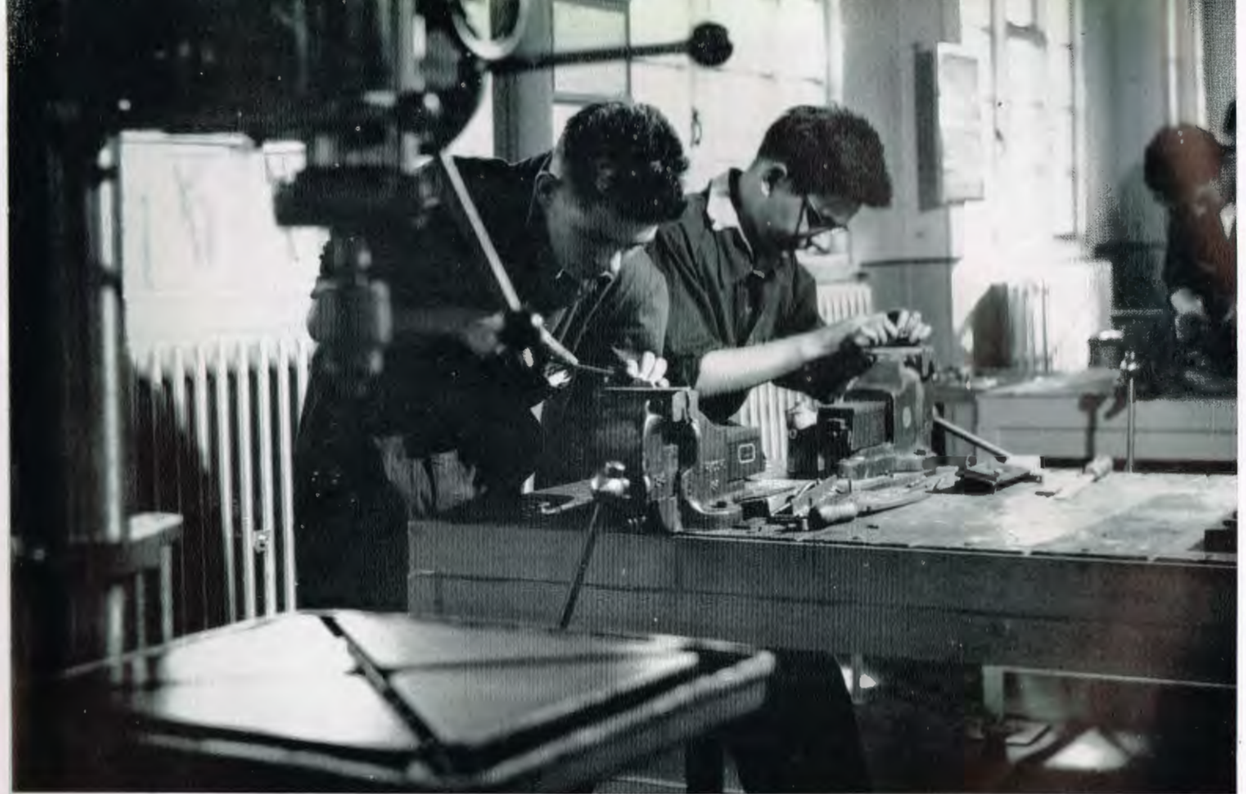


Young men *on the threshold of their careers. Whether they become craftsmen or draughtsmen, Wilton has plenty to offer them.*

A most important feature of the whole set-up is its flexibility. Not every lad of 15 or 16 knows definitely what he wants his future to be, and in any event aptitude does not always match youthful ambitions. So it sometimes happens that as time goes on an apprentice craftsman finds himself more and more attracted to the theoretical side of engineering. If so, and providing his instructors agree that he is on the right track, he will be given a chance to switch over to the Student Apprenticeship Scheme.

Let us, as is only right and proper, look first at the "senior service"—the Craft Apprenticeship Scheme. Last year no fewer than 110 potential tradesmen, aged between 15 years 8 months and 17, came to Wilton from local modern, technical and grammar schools (nearly four times this number came for tests and interviews). Each one expressed a preference for one of eleven trades, though everyone recognised that at this stage the decision was not irrevocable.

For about four months they spent all their time in the Craft School, learning the fundamentals of machine shop practice and gradually getting to know the feel of machinery and the meaning of working drawings. By this time they and their instructors were reasonably satisfied that they knew the most likely outlets for



Fashioning small tools *for his personal use during apprenticeship is an early task for every boy*

individual talents. The probation period was over, and the day arrived when signatures on a formidable legal document transformed each ex-schoolboy into a formally indentured apprentice.

At present, then, the 1956 batch of apprentices are progressing through the second stage of their practical training—the six months or so during which, still in the Craft School, they begin to specialise in their chosen craft. Now the trainee fitters and machinists have the fundamentals of turning, milling, shaping, grinding and drilling under quite expert control; they have all produced with their own hands some of the essential tools of their trade (spanners, gauges, calipers and the like), and some of them have already handled their first production jobs. Future boilermakers are coming to practical terms with the mysteries of oxy-acetylene and arc welding, future joiners with the intricacies of mortise and tenon joints.

The third stage will begin when the apprentices have been with the Company for about twelve months. This is the longest "leg" of the training schedule and will take them to within a few months of their twenty-first birthday. In the interim they will be on the plant —in other words, attached for varying periods to a succession of production or maintenance units. Here training will continue under the guidance of expert craftsmen, though the Education Department will still keep a fatherly eye on its fledglings through periodical interviews and, if the need arises, recall them to the Craft School for a brief refresher course.

Of course, the theoretical aspects of craftsmanship are not neglected. As soon as apprentices are recruited they are expected to start studying for the appropriate City and Guilds or National Certificates, and to help them in this they are released for one day each week to attend technical college at Middlesbrough or Redcar.

In their classwork and examinations at technical college some students reveal a pronounced flair for the non-manual aspects of the engineering trade, and if this happens they may ask to be transferred to the Student Apprenticeship Scheme. Now at Wilton craftsmen are regarded as no less indispensable than draughtsmen. At the same time it is in the nature of things that the exceptional draughtsman can, more quickly even than the exceptional craftsman, find

Craft apprentices *listen to their senior instructor, Mr. R. J. Wallace. They spend four months in the Craft School before they are formally indentured.*

wider outlets for his talents. To this extent, then, transfer to the "junior branch" of the Apprentice Training Scheme is considered as promotion—promotion gained by no fewer than twelve former craft apprentices last year.

It was in 1955 that the Company decided to strengthen apprentice training facilities at Wilton by inaugurating this complementary scheme, which, while embodying many of the features of traditional craft apprenticeship, was specially slanted to encourage potential draughtsmen and designers.

The words "student apprenticeship" are perhaps misleading to the outsider. They do not, of course, mean that the beneficiaries sit with pencils or books in their hands throughout the whole of their training (most of them would argue that they rarely sit down at all!). The "student" part is probably a gentle reminder that certain academic qualifications are expected. The recruits will, in general, have stayed at school rather longer than the craft apprentices, and they must have put the extra time to good use by gaining the G.C.E. at Ordinary level in at least four subjects, including mathematics, science and English.

Broad Outlook

Once accepted as probationers—and only 24 could be accepted during the scheme's first year—they go straight to Wilton's Drawing and Design School, where drawing boards take the place of desks and everyone speaks an entirely new language. They spend a few months learning this—the "sign" language of the engineering draughtsman—and then, like their colleagues in the Craft School, they sign their indentures and begin to specialise, choosing mechanical, electrical, civil or instrument engineering.

Great care is taken, though, to ensure that specialisation does not lead to inflexibility. During the first year apprentices forsake their drawing boards for occasional film shows, lectures and demonstrations, through which they begin to appraise all the varying aspects of engineering.

This steady broadening of outlook continues throughout the remaining years of a draughtman's apprenticeship. For eight months or so he will probably join the craft apprentices in their school, learning at first hand how working drawings are translated into precision-made tools or components. Then he begins his made-to-measure "grand tour." A spell on construction work may be followed by one in the central workshops and this by several months on a production plant and, if possible, at least a few weeks in an engineering laboratory. For the last six months before his twenty-first birthday he will try his wings in Wilton's main design office.

All this practical work will be done alongside study for Ordinary or Higher National Certificates in mechanical, electrical or civil and structural engineering. The results of examinations taken at the technical college are no less important to the student than to the craft apprentice. Conspicuous success may be rewarded by an invitation to transfer to Wilton's "sandwich scheme"—a three- or four-year course for the Higher National Diploma, under which students split their time between technical college and the works.

Looking Ahead

Apprenticeship schemes, however good, are only a means to an end. The really important consideration is what happens to the newly qualified craftsman or draughtsman when he comes "out of his time." Wilton certainly does its best to equip him not only with technical skill but with an adult acceptance of responsibilities and opportunities.

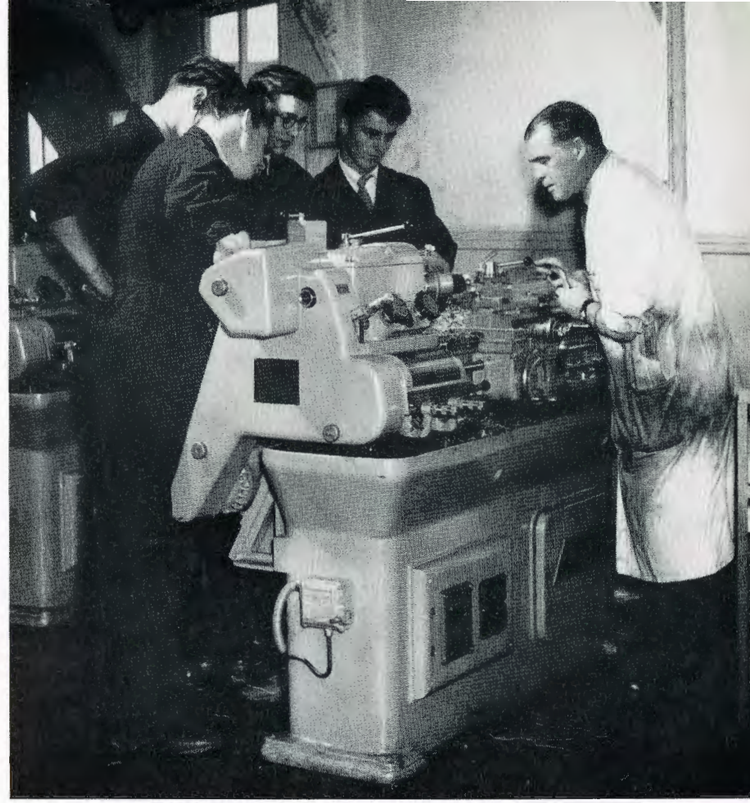
One generalisation can safely be risked—no industrial unit in the country can offer better prospects than Wilton. For this is I.C.I.'s "nursery bed." Every plant built here is dedicated either to producing something entirely new to Britain (like the 'Terylene' now in our shops or the titanium flying in our latest aircraft) or to developing for established products (nylon or polythene, for instance) a scale of manufacture never before attempted.

Progress and Adventure

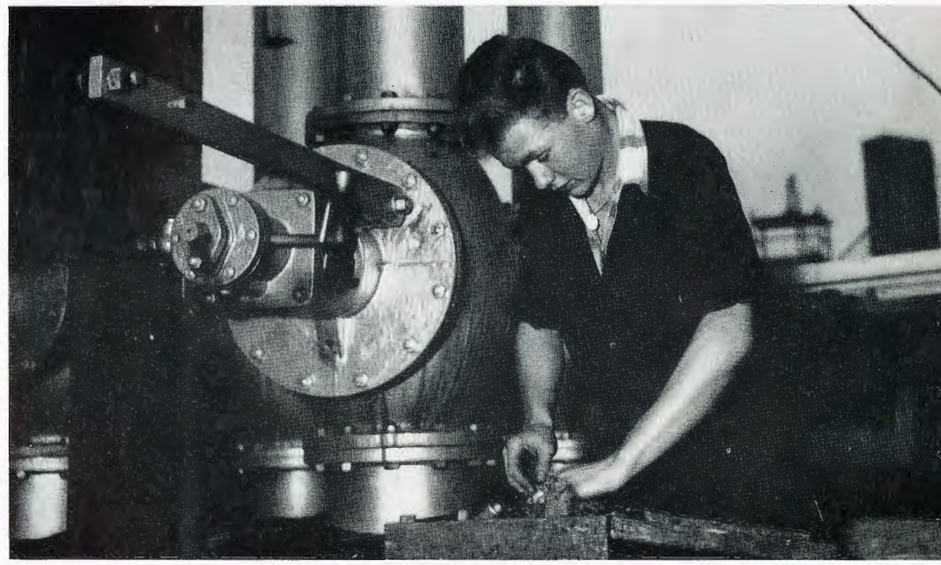
So even the lowest rungs of the career ladder are ventilated by fresh and exhilarating breezes of progress and adventure. While it is, of course, possible for a fitter or a draughtsman to get into a rut and stay there, he has only himself to blame if he does so. When eventually it is complete, Wilton Works will (in terms of built-up areas) be four or five times as extensive as it is today. Each new plant will, from the time work on its foundations begins until it is fully commissioned, need its own steadily expanding complement of specialist personnel and of supervisors and managers.

That situation, surely, argues a potential rate of promotion impressive enough to satisfy even the most ambitious recruit.

A potential draughtsman *needs G.C.E. passes in maths, science and English before acceptance for the student apprenticeship scheme*



Student apprentices—*destined to be draughtsmen or designers—get a thorough grounding in craft work. Here they watch Mr. J. Robertson demonstrate a turning operation.*



The older apprentice *graduates from full time in school to a section of the plant or a maintenance unit. But he is still under the eye of Education Department.*

One man and his job—54

Marine Superintendent

"HELLO *Polythene*, hello *Polythene*—are you receiving me? Over."

The reply from the Alkali Division's motor vessel *Polythene*, somewhere in the Irish Sea, crackled back through the earpiece to Captain Albert Griffiths, the Division's Marine Superintendent, as he sat by the telephone in his home in Hartford, Cheshire.

It is a home adorned with knick-knacks picked up in many lands during a seafaring career; a career that has taken him twice round the world in sailing ships before he was 19 years of age, seen one of his ships dismasted in the "Roaring Forties," and another torpedoed and sunk by a U-boat during the first world war.

Captain Griffiths spoke again, his voice retaining much of the Herefordshire accent with which he first set out as a brass-bound apprentice in sailing ships.

"What is your estimated time of arrival at Eastham, and what are your weather conditions? Over."

More crackling, a quickly pencilled note, and the conversation was closed.

"I just put a toll call in to Seaforth Radio and ask them to get me the vessel I want," he said. "They ring me back when they contact the vessel, and connect me with the radio/telephone. Sometimes it only takes a few minutes."

In this way, I learned, Captain Griffiths can keep in touch—any hour of the day or night, week-ends too—with any of the four coasting vessels in the Division's fleet that are at sea. Three of these, the motor vessels *Thorium* and *Cerium* and the steamship *Sodium*, are based at Fleetwood, bringing limestone from the Lime Division's Raynes Quarry in Denbighshire, and carrying finished chemical products between Merseyside, Glasgow, Belfast, and other ports. *Polythene* is based at Winnington.

As marine superintendent, Captain Griffiths will tell you with a humorous twinkle that he is now a mariner marooned in the vast ocean of the chemical industry surrounded by shoals of chemists and engineers.

More officially, he is responsible for the maintenance and operating efficiency of all vessels in the Division fleet with their crews, totalling more than 100 men.

The practical side of this responsibility—and Captain Griffiths is essentially a practical man—takes him away from his office desk at Winnington. He sees that the coasting vessels are maintained in the state of seaworthiness laid down by the Ministry of Transport and required by the Lloyd's underwriters. He keeps an eye on the 16 river craft to see that they, too, are shipshape.

Fresh problems are always arising. Two years ago, it was decided to ship soda ash direct to Scandinavian ports in bulk in chartered coasting vessels, and so cut out transshipment at Liverpool. There were difficulties to be overcome, however. Pilots were needed to guide the foreign vessels along the twisting Weaver channel. Captain Griffiths drew up a rota of pilots from among his veteran craft skippers to guide the vessels, and the system has worked well since then.

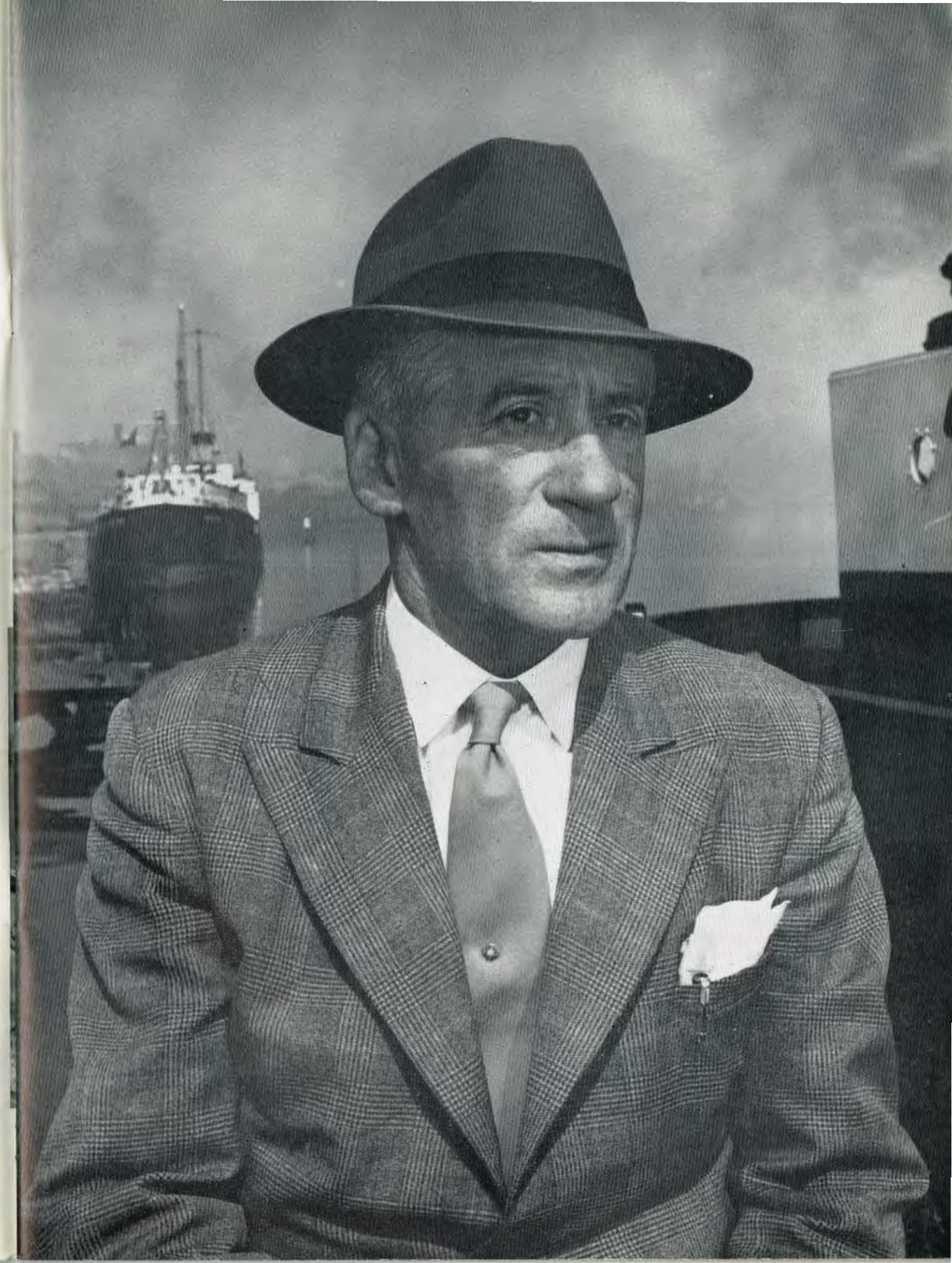
The crews who man the craft are conscious that theirs is a vastly different life from that of their fellow employees on the plants ashore—for one thing they may be away from home for anything up to a week at a time. By keeping a weather eye on the welfare of his crews the Captain is able to arrange matters so that an expectant father, for instance, may find himself temporarily on a shore job near home instead of somewhere at sea.

Yet manpower is no problem. There is a fine camaraderie among the crews, and always there are young men eager to become apprenticed to the craft.

Captain Griffiths talked proudly of his "lads" (some must be approaching retirement age!) with none of the condescension you might expect a deep-water sailor to have for coastal and inland water men.

"We get along very well," he said. "You see, I already had a great respect for these men when I came here. When I was with a shipping line I saw something of their work in the Merseyside docks during the wartime blitzes. I know what a fine job they did."

I. G.



Capt. Albert Griffiths

MISSION TO MOSCOW

By James Taylor

At the invitation of Mr. Komarov, Soviet Deputy Minister of Non-ferrous Metallurgy, an I.C.I. mission visited Russia last May. Four factories were visited—near Moscow, Rostov-on-Don, Kirov and Leningrad. Of these, the first two produce aluminium and its alloys in wrought forms, and the last two manufacture copper and copper-base alloys.*

We were extremely cordially received. A delegation headed by the Deputy Minister of Non-ferrous Metallurgy himself met us at the airport. Neither there nor on any journey did we encounter the ordinary exasperations of tired air travellers.

The Russians made all arrangements with quite remarkable efficiency, and their hospitality was indeed on a massive scale. From first to last everything went without a hitch, and every possible consideration was shown for our comfort. The man mainly responsible for the organisation reminded us on the first day of an old Russian saying that a guest is sacred: he and his colleagues certainly took that precept very seriously.

Both the technical people and the ordinary people were friendly. We were interviewed by Moscow radio twice, and by the press many times. We made at least two dozen speeches in response to toasts. We were guests at three magnificent ballets and at a football match between the "Dynamos" and the "Locomotives"; and spent many pleasant hours sightseeing and visiting art galleries. We also saw the British ambassador, Sir Patrick Reilly, and attended a cocktail party at the embassy.

The night of our arrival will long remain in our memories. From the airport we passed down an avenue of trees to the Moscow Boulevard. At the end of the avenue we looked back at a poised aluminium arrow, fashioned as if by some magic into the symbol of a plane, pointing the way back to the airport.

As we passed through the outskirts of Moscow we saw the new vast buildings of flats rising up, a veritable new city. The tremendous façade of the new university with its thousands of lights stood out boldly in the evening sky.

The next day we started work. It was warm and sunny. The golden domes of St. Basil's Cathedral and the Kremlin Cathedrals and the red stars of the Kremlin towers shone and sparkled, bringing home the fact that we were in Russia, not in a European setting, not in an Eastern setting, but something in between—Russia.

The four factories we visited were stated to be neither the best nor the worst, but a representative sample. One of the copper factories was 100 years old; the other had been working for about a year. Of the aluminium factories, one was immediately pre-war and the other a few years old. In all cases modernisation, extension or re-equipment was going on.

Our questions were answered fully and frankly, and we had every opportunity to discuss details with the shop managers and foremen.

The plants we saw were well run, and we were impressed by the quality of the management. The housekeeping was very good, and the cleanliness and tidiness were very high for this type of plant. The paintwork and decoration were rather drab compared with ours and lacked bright colour schemes. This no doubt is because there is no really good colour and pigments industry in Russia.

Relations with the workpeople appeared to be good, and the workers' attitude to the management was one of friendliness and respect.

The factories we saw were not as good as the best in Britain or the United States. For example, we saw no tube drawing comparable with the new Metals Division plant at Kirkby. But they were well up to most Western plants. More important, perhaps, technical and production problems were well understood. A policy of continuous modernisation and mechanisation was pursued in all factories we visited. The old plant was American, German and British. Practically all the new plant was of U.S.S.R. manufacture; its quality was good, and it appeared to function well. However, the most recent and most modern Russian plants are beyond the Urals.

At one factory we saw a thickness measuring device for strips which operated from a radioactive cobalt source which they were going to couple with a feedback system to control the rolls. This was shown by a very intelligent young engineer and clearly demonstrated that the Russians are alive to possibilities in the field of automatic control and are pursuing them. They are in fact mechanising and introducing automatic control on many of their machines and will try to do it for most, and it looks as if their general pattern of progress for the future is similar to ours.

The factory shops were, particularly in the newer plants, large and airy, and ventilation was good; in some cases, as in casting shops, very good. Instrumentation was, on the whole, rather simple and a bit austere, but effective and well up to the job. The finish of the instruments was not as good as ours.

. . . have worked on the floor

The Russians seem to have the gift of making the plant or process just good enough without frills. The management evidently have this idea well developed and concentrate on first things first. The standard of their strip and sheet, for example, while quite good enough, would not sell competitively against products with better finishes, such as we are accustomed to. This attitude is possible under conditions of State monopoly, since there is only one supplier.

The fact that all management have worked on the floor of the shop, either before or after their technical training, seems to promote this utilitarian approach. Nevertheless, there was evidence that the quality of the Russian wrought products is being progressively improved as new equipment is introduced.

Russian factories are run on a very highly geared incentive system. Apparently about half the "surplus" goes to the State and half to the factory. The part which goes to the factory, we were told, is allocated roughly 50–50 between amenities (like recreation clubs, sports fields and holiday camps) and cash bonuses. Bonuses are decided, it was said, in consultation between the management and the workers' union. Sometimes the workers may decide to spend part of the amenities allocation on improvements in plant and mechanisation to make their work easier. The standard of amenities, consequently, depends on the success and age of the factory. The factory has not, it appears, a prescriptive right to a high standard of amenities.

The Russians were very interested in who owned British factories. They asked whether the manager owned the factory, and had evidently some quite old-fashioned ideas about owners exploiting factories for their private benefit. In fact, one fellow asked if Sir Alexander Fleck owned I.C.I. We explained that I.C.I., the largest company in Britain, was owned by about 300,000 people and that the average holding was quite small. We told them about our profit-sharing scheme, and also how banks and insurance companies which held I.C.I. stock really represented large numbers of ordinary people. They were clearly impressed, and the information was evidently quite new to them. One of the leading Russians, in fact, ended by describing the I.C.I. Board as a high-level managerial group "which," he said, "is after all just what we are too."

The factories have a well-developed suggestion system, and all new suggestions are circulated in bulletin form prepared at headquarters. Workers are paid for their suggestions, but technical people only for suggestions of unusual merit. There was a fair sprinkling of safety posters in the various plants, but the greatest concentration was quite evidently on production, and everywhere, even in the streets, we saw posters with photographs of workers who had done exceptionally well. Imagine such photographs in Britain!

There were canteens and first-aid accommodation at all plants. At one factory, we visited these without notice, and found the standard of the canteen and ambulance rooms compared favourably with our British factories, except the most modern. They were similar in quality, for example, to I.C.I. pre-war factories.

. . . very highly geared

Another amenity is worthy of note. In all the factories we visited each shop had a little cabin or kiosk with an attendant to dispense water (and salt, if wanted), into which carbon dioxide was injected from a cylinder to make soda water. There was also fruit syrup available to add if wanted.

Gloves were worn as with us for the necessary jobs.

The greater part of the factory workers were young or middle-aged. Most of the older people we saw were doing sweeping jobs or were attendants at museums, galleries and so forth.

The normal working hours appeared to be eight hours a day from Monday to Friday and five hours on Saturday. The retirement age for general workers was said to be 60 for men and 55 for women, but for underground and some

(*Continued on page 285*)

* The mission consisted of Dr. J. Taylor, Group D (Metals and Nobel) Director, Mr. J. W. B. Peel of European Department, who acted as interpreter, and Messrs. J. St. J. Elstub, C. L. M. Cowley, R. L. P. Berry, A. Witherington and E. Swainson of Metals Division.

WATER FOR INDUSTRY

By Michael Danckwerts

A major consideration in the choice of a new site for chemical plant, such as I.C.I. is proposing in the Thornbury area near Bristol, is an adequate supply of water. Some of the difficulties which industry can be faced with in obtaining enough water are here sketched.

CAN a nation surrounded by water and with an average yearly rainfall of some forty inches really be chronically short of water? The average British householder, for whom clean, cheap water gushes obediently from taps the whole year round, will find it hard to believe.

British industry, on the other hand, is painfully aware that water in the right quantity and of the right quality is no longer easy to find. The demands on Britain's water supplies have been increasing by giant strides ever since the industrial revolution 200 years ago, and it is now believed that the demand in 1968 will be double that in 1938.

The first questions asked by a heavy industrial company which planned to build a new factory used to be: "Shall we be able to get labour if we build on this or that site?" and "Shall we be able to get transport?" Nowadays the question "Shall we be able to get all the water we want?" is of no less importance.

Take a company which finds a site near a large river estuary in industrial England where labour and transport present no problem. Will they be able to find enough water to make their product, cool their reaction vessels and machinery, raise steam, and do a dozen other things? They would look first to the estuary. The water is brackish and at times not too clean, but would do nicely for some purposes, such as cooling. But they cannot dip a pipe in the estuary to extract several million gallons of water a day without consulting local authorities and without regard for other users.

Suppose, however, that the hypothetical company is able to satisfy everyone concerned as far as their intake of tidal water goes. Now they want comparatively clean water for actually making their product. They could sink a borehole, but geologically the yield is likely to be small, and in any case pumping is controlled in this area, as in many others, because the water table is falling rapidly So they apply to the local water undertaking, which owns reservoirs in the hills fifty miles away and has a statutory duty to supply water in the area.

Their water is good, clean stuff, as supplied to domestic consumers; the only trouble is, there is not enough of it adequately to supply all the industries in the area as well as the householders. Our hypothetical company agrees to buy as much of this potable water as it can get, in the full knowledge, however, that in times of drought the domestic supply must be maintained at the expense of industry. The company would willingly have agreed to take a larger quantity of less clean water unfit for domestic use, but the water undertaking has none.

Fortunately there is a sizeable tributary of the river which flows quite near the site. Perhaps that could be used? Enquiries show that existing users are taxing it to the limit. What about the smaller stream which actually flows along one of the boundaries of the site? As the riparian owner the company is entitled by law to take water from this stream, so long as it is returned in the same quantity and quality. But they are deterred from doing so by the experience of other factories, which has shown that in practice to return the water without causing some variation in the quality of the stream is just not possible.

Some distance away there is a canal, full of clean water which would suit the hypothetical company admirably. But although the canal owners have no objection to their water being taken, they regret that the canal, being outmoded for transport purposes, is just about to close down; once it does so the owners' right to sell the water at all is disputable.

To run up against such a uniformly antagonistic set of circumstances in real life would not be unusual by any means, and the difficulties which industry faces are now so serious that the Minister of Housing and Local Government has set up a committee to find out and inform him of the facts.

The Central Advisory Water Committee, as it is called, has given birth to two sub-committees. One has been set the task of finding out to what extent the country's demands for water for all purposes are likely to increase; to consider how the demands may be met; and to find out whether there are ways of economising in water. The other is to tell the Minister just how much is known at present about the country's water resources and how much ought to be known.

The Minister, with the best will in the world, cannot create new sources of water. One of the things he may do is to encourage the process, already begun, of rationalising statutory water undertakings and making them better able to cope with the demands made on them. There are more than a thousand of these statutory water undertakings in England and Wales. Many of them which twenty years ago had the job of supplying a handful of rural communities with potable water now find themselves expected to supply industrial users with millions of gallons of water for every use.

. . . consulting local authorities

I.C.I.'s own water problems are the same as industry's generally. On Tees-side, for instance, Billingham and Wilton are in an area which makes newspaper headlines whenever the chronic problem is made acute by a dry summer. The concentration of industry in this particular area has reversed the country-wide average figures for water demands—two-thirds of the water supplied is for industry and one-third for homes, instead of vice versa.

Billingham Works and Wilton Works between them consume more water than is required to meet the total industrial and domestic needs of nearby Darlington, a town of 84,000 people. The other important user on Tees-side is the steel industry, which takes about a quarter of the Water Board's daily rate of supply.

Billingham Works uses clean water amounting to about one-fifth of the Water Board's average daily rate of supply. Wilton also takes clean water from the Water Board but in addition receives a separate supply of unfiltered fresh water from a pumping plant installed by the Water Board up the River Tees at Low Worsall, which has so far been reserved for Wilton's exclusive use. Both factories forecast large rises in demand in the next few years.

Billingham's huge consumption is explained by the large size of the factory and by the processes of heavy chemical manufacture. These processes in the first instance need steam and power, and the boilers provide 1200 tons of steam an hour for the electric power plant and for general distribution throughout the factory. Much of this steam—about four million gallons a day in terms of water—circulates completely and returns to the boilers again and again, but large quantities of "make-up" water are needed each day. One reason for this is that some of the steam is decomposed to form the hydrogen which is the basis of many of the Billingham manufacturing processes, and in fact a proportion of the water used for generating steam "disappears" into the final chemical products. For cooling purposes Billingham uses River Tees water from the estuary as it flows past, returning it to the estuary after use. This water is easily available, but is suitable only for cooling.

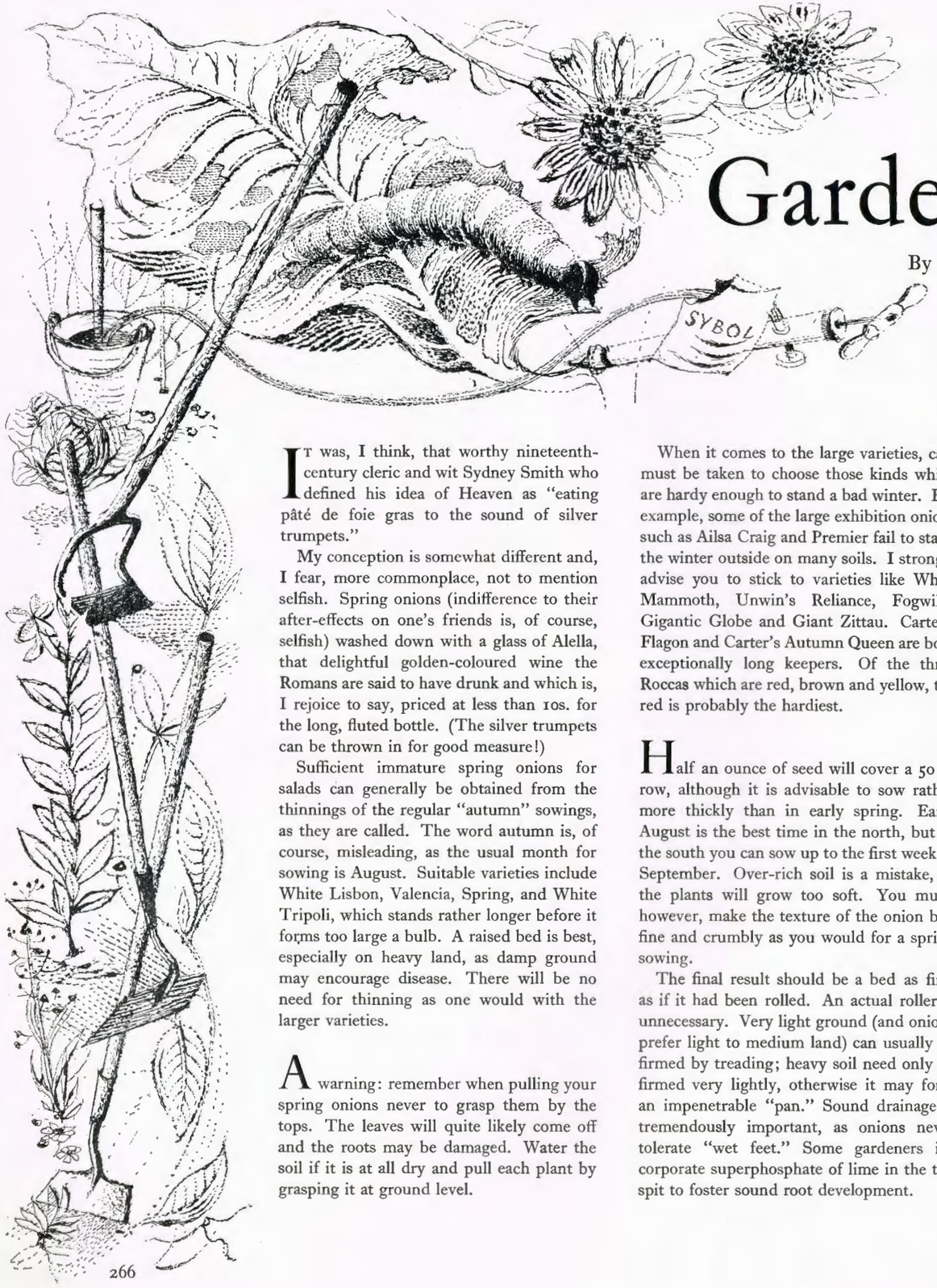
Although a few I.C.I. factories are more fortunately placed, the general position is that at none of them is the management entirely free from worries about water supplies and at all of them a great deal of effort goes to solving water problems.

Whatever steps the Minister of Housing and Local Government may take to ease the shortage of industrial water, he will certainly urge stricter water economy.

. . . large rises in demand

Saving water in industry is not just a matter of turning off taps—though that is a help. It is almost certain to mean reorganisation and capital expenditure. Whenever it is possible—and economical—to recirculate water after use, for example, the best means must be found of cooling and purifying the used water to make it fit for further use. Large cooling towers may have to be installed and elaborate water treatment plants provided. Piping arrangements may have to be altered or new systems designed so that processes which have depended on mains supplies can be worked with, perhaps, less pure though more abundant water.

In I.C.I. there is a constant search for ways of cutting down the amount of water that goes into processes and at the same time a scrutiny of the quantity and quality of water that comes out of processes—for the more water that goes, literally, down the drain, the less is available for industry.



Garden Notes

By Philip Harvey

It was, I think, that worthy nineteenth-century cleric and wit Sydney Smith who defined his idea of Heaven as "eating pâté de foie gras to the sound of silver trumpets."

My conception is somewhat different and, I fear, more commonplace, not to mention selfish. Spring onions (indifference to their after-effects on one's friends is, of course, selfish) washed down with a glass of Alella, that delightful golden-coloured wine the Romans are said to have drunk and which is, I rejoice to say, priced at less than 10s. for the long, fluted bottle. (The silver trumpets can be thrown in for good measure!)

Sufficient immature spring onions for salads can generally be obtained from the thinnings of the regular "autumn" sowings, as they are called. The word autumn is, of course, misleading, as the usual month for sowing is August. Suitable varieties include White Lisbon, Valencia, Spring, and White Tripoli, which stands rather longer before it forms too large a bulb. A raised bed is best, especially on heavy land, as damp ground may encourage disease. There will be no need for thinning as one would with the larger varieties.

A warning: remember when pulling your spring onions never to grasp them by the tops. The leaves will quite likely come off and the roots may be damaged. Water the soil if it is at all dry and pull each plant by grasping it at ground level.

When it comes to the large varieties, care must be taken to choose those kinds which are hardy enough to stand a bad winter. For example, some of the large exhibition onions such as Ailsa Craig and Premier fail to stand the winter outside on many soils. I strongly advise you to stick to varieties like White Mammoth, Unwin's Reliance, Fogwill's Gigantic Globe and Giant Zittau. Carter's Flagon and Carter's Autumn Queen are both exceptionally long keepers. Of the three Roccas which are red, brown and yellow, the red is probably the hardiest.

Half an ounce of seed will cover a 50 ft. row, although it is advisable to sow rather more thickly than in early spring. Early August is the best time in the north, but in the south you can sow up to the first week of September. Over-rich soil is a mistake, as the plants will grow too soft. You must, however, make the texture of the onion bed fine and crumbly as you would for a spring sowing.

The final result should be a bed as firm as if it had been rolled. An actual roller is unnecessary. Very light ground (and onions prefer light to medium land) can usually be firmed by treading; heavy soil need only be firmed very lightly, otherwise it may form an impenetrable "pan." Sound drainage is tremendously important, as onions never tolerate "wet feet." Some gardeners incorporate superphosphate of lime in the top spit to foster sound root development.

If you have any cloches it is a good plan to place them over the rows in late October, as this generally ensures that the seedlings come through the winter unscathed. Very early spring onions can be pulled at Christmas if the cloches are placed in position directly the seedlings emerge. They will, of course, be rather smaller than usual, though still very acceptable. Incidentally, in the absence of cloches, old pea sticks will afford excellent protection against biting north-east winds.

Provided the weather is open, autumn-sown onions may be transplanted about mid-March. If you wait until April your onions may run to seed, particularly during a hot, dry spell.

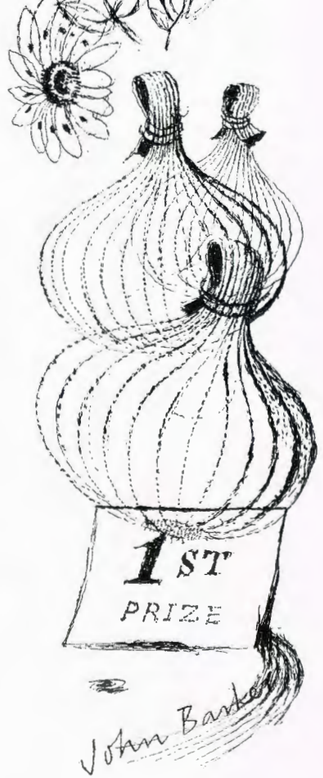
The second generation of Cabbage Caterpillars which appear during August and September can do considerable damage to winter greens unless a careful check is kept on all brassica seedlings. Damage is, in fact, usually more widespread than in early summer. In some seasons the second generation of butterflies is strengthened by invasions from the Continent, and caterpillar attacks may persist into October.

The dull yellow eggs are laid chiefly on the undersides of the leaves and are quite conspicuous. In theory, one should go round and hand-pick these eggs but nobody ever does! Small holes in the leaves usually indicate that the young caterpillars are at work, and you can then destroy them before the plants are seriously injured. In my view hand-picking is tedious and messy, and it is far less trouble to give a thorough dusting with 'Abol' Gamma Dust. DDT is an excellent alternative, but in either event try to dust when the air is still and there is some dew on the foliage. If you prefer an insecticidal spray such as 'Sybol,' make certain the insects are well wetted!

Snowdrops last longer in water than any other winter-flowering bulb. There is also the added advantage that, unlike crocuses, they are rarely troubled by birds. They are particularly happy in the cooler climate of the north and in Scotland and accordingly bloom freely in a shady corner of the garden, provided drainage is satisfactory. They are not at their best on hot, dry soils.

Snowdrops can be recommended for planting in short grass, in clusters on the lawn, under trees, or as an edging to a path. The leaves usually die down by the end of April, but in any case the bulbs do not seem to suffer unduly if some of the foliage is cut by the mower.

Snowdrops should be planted about 3 in. deep and preferably by mid-September so that the bulbs can make plenty of roots before they start to flower. A 3 cm. bulb should ensure some bloom the following year. Smaller bulbs may not flower for another twelve months. The double snowdrop (*Galanthus nivalis flore pleno*) lasts even longer than the single form but is, I feel, less graceful.



How to grow Dahlias

By Donald Cambell

Few flowers give a more rewarding show in high summer than dahlias. There are 2000 varieties to choose from in every colour of the rainbow, and the amateur can grow them really well with a little care.

ALTHOUGH the modern dahlia is undoubtedly a flower for every garden, large or small, there are still many amateurs who do not realise the astonishing progress made in recent years. The colour range is immense, offering almost all the hues of the rainbow, while the individual blooms vary in size and form from a golf ball to a dinner plate. Given a reasonably fertile soil, an open, sunny position and plenty of water during dry spells, they are by no means difficult to grow really well.

The different types include the pompons with globular flowers ranging in size from 1½ in. to 4 in.; the cactus varieties with the revolute petals; and decoratives, with their broad petals either rounded or pointed at the tips. The cactus and decoratives range from 3 to 4 in. up to 11 in. across. There are also the bedding dahlias, including the singles such as Coltness Gem and doubles like Downham, and the collarettes, single flowers with a collar of small petals arranged round the centre.

If you wish to grow dahlias simply for garden display or cutting, it is best to concentrate on the bedding types comprising the small and medium varieties in the pompons, cactus and decorative groups, also the collarettes. These give flowers that will last several days in water.

The large and giant varieties in the cactus and decorative groups are chiefly for those who wish to match their skill against each other on the show bench, although there is no reason why the ordinary gardener should not grow an odd giant or two in order to show his neighbours what he can do.

Dahlias like an open, sunny position, but a good hedge or wall around the garden will protect them from the prevailing winds. They will grow in any soil, whether light, medium or heavy, but for best results the ground should be deeply dug in the autumn incorporating farmyard manure or well-rotted compost. Where this material is not available use bonemeal at the rate of 4 oz. per square yard along with 2 oz. sulphate of potash. During July and August, sprinkling the surface with one of the well-known flower fertilizers will be helpful.

For the beginner, young green plants may be obtained from the nurseryman in time for planting out at the end of May or early June. If a greenhouse or a frame is available, delivery may be accepted during April. This will necessitate putting the young plants into pots when they arrive, using John Innes No. 1 compost, and transferring to larger pots in due course so that they do not become potbound, otherwise they will suffer a definite check. These young plants must also be hardened off by gradually exposing them to the open air, at first in the daytime and later at night when there is no risk of frost.

When planting out, the spacing for ordinary purposes should be 2½ ft. between individual plants; more space is needed if exhibition blooms are required. Dig a hole just deep enough to take the soil ball after being turned out of the pot, place in the hole and press the soil firmly round, subsequently tying the plant to a stake.

During a spell of dry weather the plants will require copious amounts of water; mulching with manure, spent hops, leaves or lawn cuttings will help to conserve moisture and reduce the need for watering.

Your dahlias will flower from August until they are blackened by the frosts towards the end of October.

The tubers are best lifted a fortnight after the frost. The stalk should be cut down to about 4 in. from the

Princess Marie José

Death of King Albert

ground, then by placing your fork in the ground about 12 in. away from the stalk and levering gently the tubers can be lifted from the ground with a fork.

Bring the tubers inside, making sure that the labels are securely tied on for identification the following year, and place them in an upside-down position so that any surplus moisture in the stems can drain away. Should any be damaged, rub the wound with hydrated lime. After about a fortnight clean off as much soil as possible, trim off all the fibrous roots with a pair of scissors and put the tubers in dry sand, peat or ashes, dusting the crowns with flowers of sulphur to keep away mildew, then store them in a place that is dry, frostproof and with a good air circulation. *Never store your dahlias in a warm cupboard, as this may cause the tubers to shrivel.*

In the following March the tubers can be boxed up in soil and damped to encourage the eyes to grow at the crown. As soon as the eyes are to be seen the tubers can be divided up, taking care that there is an eye to each piece of tuber and if planted out straight away, they will go ahead without protection.

I must stress that a piece of tuber without any part of the crown is useless.

Colonel W. Ogg

There are about 2000 varieties in the National Dahlia Society's classified list, and not all nurserymen grow the same varieties. Those you will decide to grow will depend on individual taste, but I can confidently recommend the following:

Cheerio	*Small cactus, cerise with white tips*
Deerplay	*Small cactus, golden yellow*
Doris Day	*Small cactus, cardinal red*
Willy Flaton	*Small cactus, white*
Edinburgh	*Small decorative, maroon tipped white*
Glorie van Hemsteede	*Small decorative, yellow*
Kendal Pride	*Small decorative, soft rose*
Helly Boudewijn	*Small decorative, white*
Rhonda	*Small pom, white to lilac*
Willo's Violet	*Small pom, deep violet-purple*
Jean Lister	*Large pom, white*
A. Kearley	*Small pom, crimson*
Pioneer	*Medium cactus, yellow*
Vic	*Medium cactus, crimson-scarlet with golden base*
Heart's Desire	*Medium cactus, salmon*
White Rays	*Medium cactus, white*
Edith	*Medium decorative, rose-pink to cerise, yellow centre*
House of Orange	*Medium decorative, soft orange*
Ormerod	*Medium decorative, bright orange-scarlet*

Master Farmer

By George Ordish

Illustrated by H. R. A. Winslade

It is a big day for the native farmer in S. Rhodesia when the Land Development Officer comes to examine him on farming methods. If he shows he is an efficient farmer, he can wear the Master Farmer's badge and buy good land in the Native Purchase Area.

DURING a recent visit to Southern Africa I was fortunate in being able to spend the long Easter holiday in the middle of a Native Reserve in Southern Rhodesia. This was a large tract of bush country, about the size of Kent, where I was staying with a friend, the Land Development Officer for the district.

Although primarily his duties are obviously to develop the land, in point of fact he has an enormous range of other tasks, because, apart from advising, instructing and coercing people into using the land well he seems to be midwife, doctor, magistrate, transport organiser and chief engineer—to say nothing of architect and father confessor, town planner and legal expert. He is also a collector of archaeological details. In his spare time he makes a few maps.

It will readily be seen that a successful land development officer is something of a paragon, and it is amazing that the authorities get such good men for such little money.

My friend, whom we will call John, his wife and small daughter live some 20 miles from a road, and when you get to this road it is then 60 miles to a small town. There is, of course, no telephone or postal delivery—one collects one's letters once a week from the nearest post office some thirty miles away—nor is there any electric light or gas; they do not think there is any bilharzia in the water, but nevertheless leave it in the tank for the requisite period before using it. They have a pleasant but simple government house, but surprisingly pay quite a substantial rent.

It is a very isolated life, and compensation must be looked for in the doing of a supremely worth-while job, the actual joys of isolation, and the study of the strange countryside.

In this particular family there was a remarkable series of pets—a bush baby, a small wild deer, a chameleon, two native sheep and, strangest of all, a crow called Charlie. Charlie slept on a perch on the veranda and during the day would follow my friend in his Land-Rover for miles.

Charlie had two methods of travelling, either perched on the spare wheel on the top of the bonnet or by flying high above us. Both were quite remarkable. He would spread his wings on the bonnet and lean forward into the wind: he would hop up and down as the vehicle lurched over the rough track, and if it got too rough or the branches of the trees swept the bonnet he would take to the air and apparently fly away.

John would stop the Land-Rover, get out and get on with his work, but he always had an eye on the sky. "There's Charlie!" he would say, and there the crow would be, chasing a bird twice its size. A sharp whistle would bring Charlie flying down straight as an arrow. It would seem that Charlie always had his eye on us as well. All the Africans in the neighbourhood seemed to know and to like Charlie and would send reports of his whereabouts or bring him back home if he had strayed too far.

The countryside is beautiful. It is in the main light bush—cleared in parts for the native farmers—and over it all dominates the strong, brilliant Rhodesian light which seems to be stronger when there is a cover of light cloud than when the sun is actually shining.

Dotted about the bush are the fascinating kopjes.

Charlie came down, *straight as an arrow . . .*

These are characteristic of Rhodesia and quite different from those in the Union, although they are known by the same name. They may be anything from two or three granite boulders perched one on top of the other, looking as though they could be pushed over with a little finger, to great domelike projections of granite a mile or more in circumference. These kopjes are absolutely fascinating in their complexity and the collection of plants which abound in them. Moreover, interesting remains of early man can be found in the form of the Bushman paintings.

In the Native Reserve no white man may hold land. The native farmers have smallholdings of some eight to ten acres and a certain amount of common grazing rights. The soil on the whole is rather poor sand derived from the wearing away of the granite rock.

Adjoining the Reserve is the Native Purchase Area, and here the soils are better and the land has been surveyed and divided up so that the bigger farms can be offered to the native, giving him the opportunity to improve his position in the community. The Government is naturally anxious that these new farms be cultivated efficiently; before a native can purchase a farm here—and he can buy up to 400–500 acres on very easy terms—they want to be sure that he not only knows something of good agriculture but is able to practise it. In other words, the native is not allowed to buy land in the Purchase Area unless he holds a Master Farmer's certificate. To do this he has to pass an examination in much the same way as an agricultural student in an agricultural college in Britain, the difference being that he does not have written papers.

The Land Development Officer visits the farm, sees what it is like and asks a number of questions on

farming, and I was fortunate to be able to attend two of these examinations. It is a matter of great importance to many individuals to be able to pass this examination. Firstly, it gives him a great deal of prestige in the community if he can wear the Master Farmer's badge and, secondly, it enables him to buy one of these much-desired farms in the Purchase Area.

To get the certificate he has to have a three-roomed house, adequately thatched and properly painted. He must have a separate kitchen and a shed for his tools. His cattle kraal must be of stone instead of the extraordinary conglomeration of wooden branches so frequently seen. He must have a compost heap and certain tools—a plough, harrow, maize planter and Scotch cart.

On Easter Saturday we set out to visit the first farm and drove some 20 miles through the bush in John's Land-Rover. Behind us was the supervisor (Mr. Sitole), who is also interpreter, for although my friend spoke the native language very well it is better to have the interpreter there in case of difficulty.

Eventually we arrived at the candidate's farm. Obviously great preparations had been made for this big day. There were three or four flower beds bright with marigolds. The whitewash on everything was gleaming. The farmer (Mr. Peaveye) and his wife were standing at the gate in nervous anticipation. My friend, with whom I worked in Mexico at one time and who had always seemed a very cheerful, pleasant chap, now had the look of a hanging judge on his countenance. We got down and were greeted and started the inspection.

The house was very clean, but my friend did not think the thatch was thick enough. The kitchen to my mind seemed very peculiar, but I was assured that it was a good example and very suitable. It is a rondavel made of mud brick with a thatched roof and a door. The fire is lit in the middle of the floor and the smoke either gets out through the door or filters through the thatch. Two or three women were cooking something delicious in a big iron pot and an old man was seated outside the door, attracted by the smell and the general atmosphere of expectancy.

The cattle kraal was well built, the compost heap was adequate and the implements were all in their shed, but my friend got down to inspect the blades to see if they had been used recently. We then returned to the house, where an oral examination took place. Two chairs were produced for John and myself. The candidate with clean shirt and trousers stood in front of his examiner, his hat in his hands. He was obviously very nervous and anxious to impress. No flicker of emotion showed on my friend's face. The interpreter stood by to prevent any misunderstandings taking place.

"What is a suitable four-course rotation?" On the sand in front of his house the candidate draws four lines. In one division he puts a maize cob, in the next some beans, in a third some millet and in the fourth some more beans.

"Where would you put your kraal manure?" He puts a piece of manure on the maize, and so on. The examination seems to get more and more complicated. John wants two more crops in the rotation. I feel that the candidate should be encouraged to think he is doing well by a friendly smile every now and then, but John looks so severe that I was afraid he might order us both to be executed summarily, so I too hardly dared let any sign of emotion pass over my countenance.

The next subject is contour ridges, and we enter into involved and complicated descriptions of these.

Then: "What would you do with a sick cow?" The answer "Sell it," which is sometimes given, is not approved of by my friend. The interrogation winds on and I feel that only a Professor of Agriculture could get anywhere near a pass mark. However, very laconically, at the end my friend said: "All right, he can have his certificate." This was in English, so the interpreter gave the good news to the candidate.

One has no idea of the excitement that then broke out. The candidate was overjoyed and gave a war-whoop like we as children used to give when we were playing wild Indians. His wife joined in and all the relatives in the neighbourhood also. Some of the women got up and danced around on one leg, as did the farmer himself. Their joy and pleasure at this great event were really touching. The neighbours hearing the news came in and added their congratulations. Then the serious business of the day started. A large black pot of native beer was brought out and John and I had to drink from it first.

He looked at me and said: "You've got to drink this and look as if you liked it, and then drink some more."

I said: "It looks very nice, but tell him not to stir it up so that all that mucky deposit is mixed in."

"That," he said, "is supposed to be the best part."

"Well," I said, "I don't like the look of it."

He said: "It doesn't matter, you've got to drink it just the same."

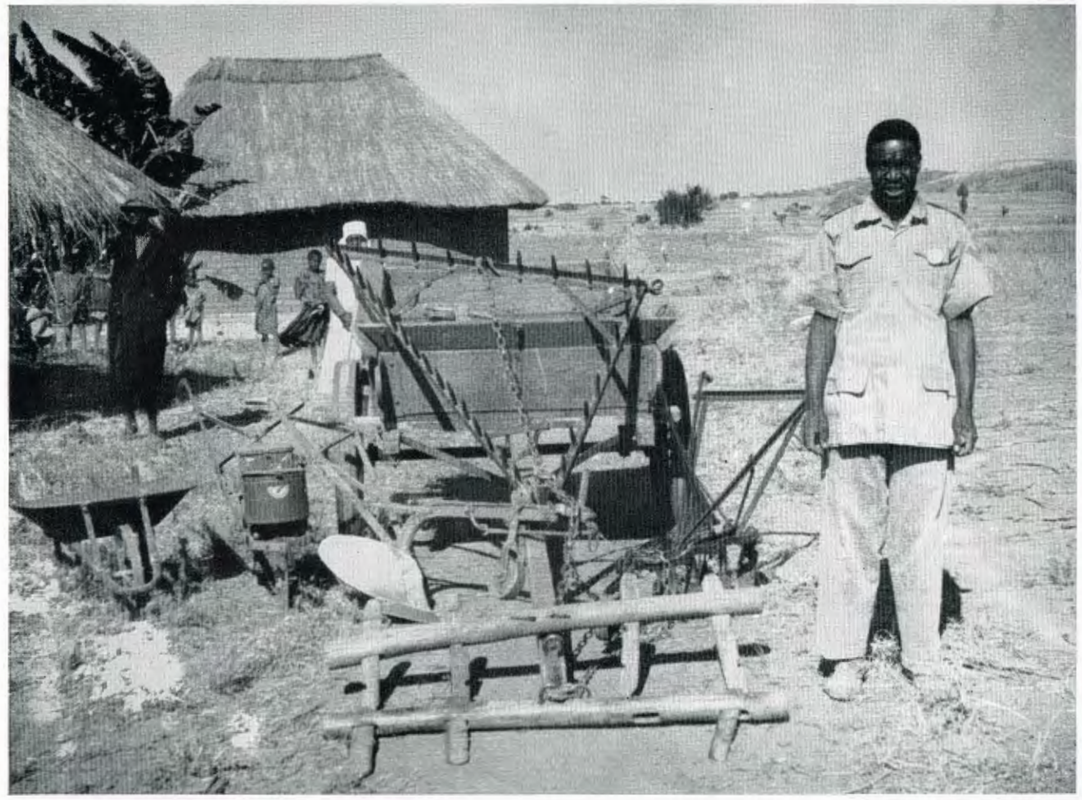


Photo: L. Shutte

A Master Farmer, *wearing his badge, poses with his implements—plough, harrow, maize-planter and Scotch cart*

The farmer was pouring out a glass for me (we had the distinction of being offered glasses) when his wife came forward and indicated that there was still some deposit in the bottom and it had to be stirred up again—nothing was too good for us—so that I had a rather thick drink. Apart from the deposit it really was quite pleasant—slightly acid, rather refreshing and definitely intoxicating. It seemed to have the advantage of continuing to ferment in the stomach, thus keeping up the warm glow over a much longer period than do European liquors.

I wanted to catch my host's eye and drink his health, but such a thing is not known and John said: "He will only think you are crazy if you try to do that. The only thing you can do to show your appreciation is to ask for some more!"

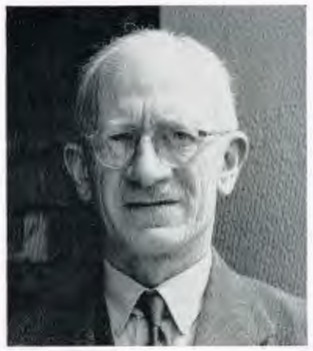
I thought I might manage to sneak in a glass from the gourd before it was stirred again, but no doubt they could not insult me to this extent, and the whole thing was stirred up again for my benefit. The pot was now passed around the immediate family and then, presumably, to the poor relations, and finally to the hangers-on, and every now and then someone struck up a war-cry and danced. As a matter of fact, I think the cry and the little dance are their method for saying "Thank you" for anything.

The farmer's method of expressing his thanks was very practical. He brought out several chickens tied by the legs and put them in the back of the jeep for us, a few cigarettes and a bottle of orange juice. I think on some occasion my friend must have had some oranges squashed out for him at one of the farms, and this was thought to be his favourite drink. I commented on the fact that, though this seemed like bribery and corruption, I was at least glad to see it was payment by results—no pass, no chickens.

"Nonsense!" he said; "they would redouble the gifts if I failed the man!"

NEWS IN PICTURES

Birthday Honours. *Mr. J. A. Brown, Casebourne Labs. Manager and member of Middlesbrough Town Council for the past ten years, received the C.B.E. for political and public services*

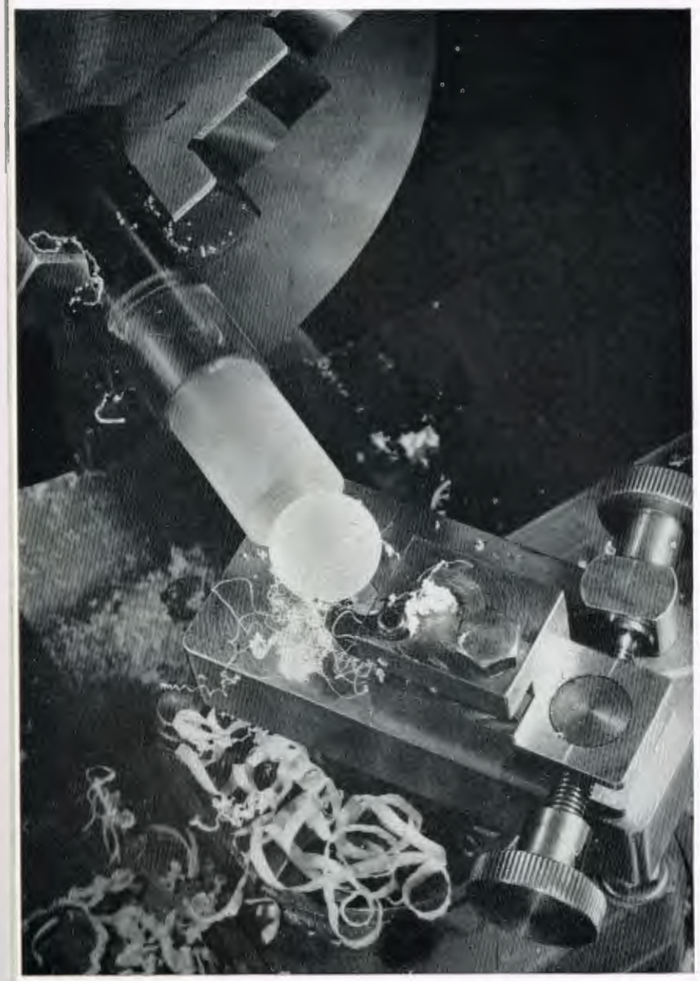


Mr. Edward Whitworth, *a joint deputy research manager in the Nobel Division Research Department since 1952, has been awarded the O.B.E.*

Mr. T. W. Davies, *a sheet metal worker at Marston Excelsior's Fordhouses Works, Wolverhampton, received the B.E.M. He is a former workers' chairman at Central Council*

Half-century. *Mr. J ohn Stevens of Derby Works re ently completed 50 years' s rvice with Dyestuffs Division—4 9 of them at Spondon W orks*

For radar instruments. *Among I.C.I. exhibits at the British Plastics Exhibition held in London were plastic radomes for aircraft and guided weapons. Above: Radomes for Gloster "Javelin" aircraft lined up at Marston Excelsior's Fordhouses factory*



Plastic heart valve. *A valve developed by British Industrial Plastics to treat patients suffering from a serious heart condition arising from the faulty closing of the heart valves. The operation of inserting a plastic valve into the aorta was pioneered by Dr. Hufnagel in the United States. Above: Machining a Perspex ball for the valve at the request of St. Thomas's Hospital is being used to*

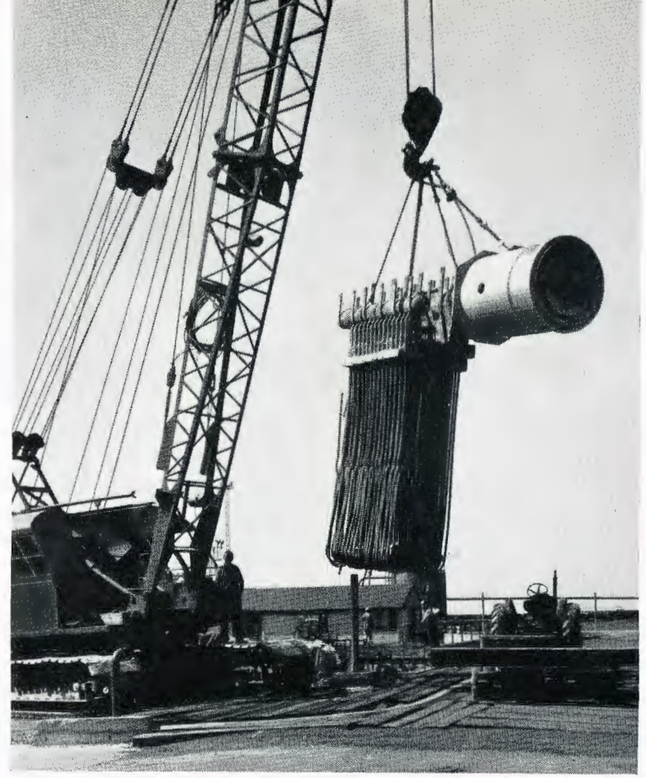
Open day—1. *An electro-magnet lifting a charge of iron borings stole the show at the open day for families and friends of employees at Dyestuffs Division's Huddersfield Works*

Open day—2. *Superb views and soft drinks rewarded all guests climbing to the top of the new power station building during Winnington Works' first open day*

Pocket Venuses. *A fashion contest for the very junior "junior miss" at the Billingham Synthonia sports and gala day showed that fashion consciousness starts young these days*

Royal visitor. *An exhibition "Industry Advances" formed part of the celebrations to mark the 750th anniversary of the granting of Liverpool's charter. The General Chemicals Division stand was visited by the Queen Mother, photographed above, with the Lord Mayor and Mr. J. L. Tedbury (Division Commercial Director)*

Sprint champion. *Mrs. Isabel Bond. At the recent women's amateur championships in Edinburgh she set up a new record for the 100 yards (11·3 seconds), and also finished first in the 220 yards. (Photo:* Scottish Sunday Express)



Missing beacon. *The flame from the Olefine No. 1 plant at Wilton died for the first time in two years when the biennial maintenance check began. The plant, which had been running for 723 days, last year made 11% more ethylene than it was thought capable of producing. Above: A section of the steam heater being removed for overhaul*

Lostock jubilee. *To celebrate the 50th jubilee of Alkali Division's Lostock Works, day trips to the seaside were organised for all employees and their families. Above: Fred Ashley and his family on the A shift outing at Southport.*

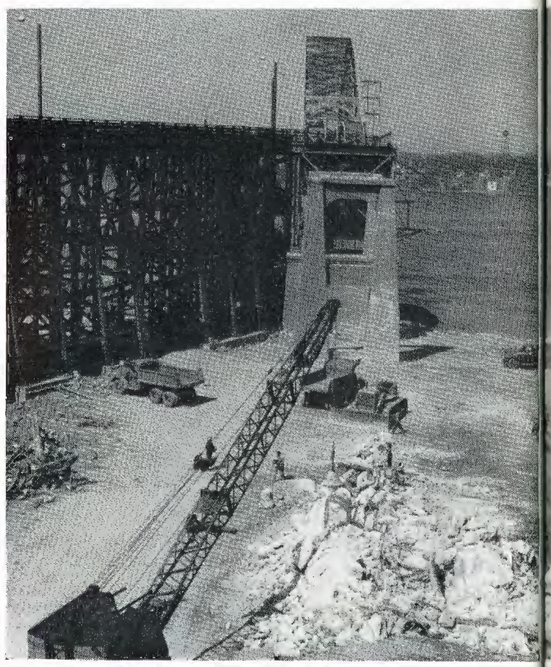
The first million. *Chairman of the Wilton Council, Mr. J. C. H. McEntee, unfurls the Central Workshops safety flag on the new workshops building to celebrate the first million hours' accident-free run at Wilton since the start of the safety scheme*

On trial at Lords. *A cricket pitch cover made from tough P.V.C.-coated nylon is being tried out by the M.C.C. at Lords. The nylon cover weighs only 45 lb. and can be easily put down or taken up by two groundsmen*

PICTURES FROM OVERSEAS

Australia. *British Nylon Spinners, the joint I.C.I.–Courtaulds Company, is going into production in Australia. This £A4 million nylon spinning plant on a 92-acre site at Bayswater, in the eastern suburbs of Melbourne, is now nearing completion. It will be operated by British Nylon Spinners (Australia) Pty. Ltd., a fully owned subsidiary of B.N.S.*

New Zealand. *All three I.C.I.(N.Z.) employees who received awards for 30 years' service from I.C.I.A.N.Z. chairman, Mr. K. G. Begg, at a recent ceremony in Wellington had initially been engaged by Mr. Begg when he was manager of Dyes and Chemicals Ltd., now part of I.C.I.(N.Z.). Left to right: Mr. Begg, Miss E. M. Rutter, Mrs. V. M. Dixon and Mr. W. D. Murie*



Canada. *As part of the St. Lawrence Seaway project, the south approach to one of Montreal's bridges had its "feet" neatly knocked away from under it (see above, right). About 1200 lb. of C.I.L. dynamite were used in the blast. Traffic across the bridge resumed again only 13 minutes afterwards, using a temporary approach (above, left). A higher approach is to be built to allow larger vessels to pass under the bridge in travelling to and from the Great Lakes*

Australia. *This year's harvest at I.C.I.A.N.Z.'s Dry Creek saltfield in South Australia has set up a new record. The season's total of 283,946 tons is nearly 20,000 tons ahead of the previous record and 30,000 tons better than the 1955–56 tally. The best day's record during the season was 5984 tons. Right: Months of gathering salt had been dry work in a particularly dry season, and this group was more than ready to break the drought at the "harvest home" wassail*

Canada. *Five employees from C.I.L.'s Brownsburg Works, Don Todd, George Gordon, Bob Sugden, Dave Gulphin and John Duncan, took part in the second Canadian skeet championships—one of the top meets in North America—held recently in Montreal*

People and events . . .

NEARLY every national newspaper in Britain carried news about I.C.I.'s proposal to build a £100m. chemical plant on Severnside. But for the benefit of anyone who missed it, the Company's statement is given in full on page 285.

The proposal goes before the Gloucestershire County Planning Committee in September, and the committee's recommendations will then be passed to the County Council for consideration.

The general manager and secretary of the new project have already been named. The general manager is DR. H. G. REID, who for the last two years has been personal assistant to Mr. W. D. Scott, the group director for Billingham, Wilton and Central Agricultural Control. He started his career as a plant manager at Billingham in 1934, served a two-year spell with I.C.I. (New York) and became oil works deputy manager at Billingham before moving to London. The secretary is MR. J. D. COUSIN, formerly secretary of Salt Division.

A Station called Craik

FOREIGN travel is full of surprises. When MR. E. M. FRASER, I.C.I. Sales Controller and chairman of Plant Protection Ltd., was travelling in the Argentine he came across a railway station called James Craik.

The affair is just as much a mystery to DR. JAMES CRAIK, chairman of Nobel Division, as to anyone else. Railway enthusiasts say that his chances of returning the compliment by discovering a station called E. M. Fraser are rather slim.

Vitesse

FOURTEEN tons of dyestuffs and intermediates for I.C.I. (France) recently travelled direct from Huddersfield Works to Rouen by road.

An articulated vehicle was used, and the tractor was disconnected after it had hauled the trailer on to the ferry boat at Tilbury. At Antwerp an international road haulier collected the trailer, using one of his own tractors, and took it to Rouen.

Dyestuffs Division Distribution Centre had been considering this kind of "door-to-door" delivery for some time. Thanks to the forethought given to documentation and arrangements for clearing through customs, the experiment went without a hitch.

The economic aspect of this kind of delivery still has to be worked out, but at least a 48-hour service is a practical proposition.

Coming-of-age

PHARMACEUTICALS Division's new research laboratories are to be opened by LORD WAVERLEY, I.C.I.'s senior lay director, on 1st October.

The laboratories, incorporating the latest in just about everything, lie in Alderley Park, a 350-acre estate three miles from the Division's headquarters at Fulshaw Hall. To some of the pioneers these new quarters will seem like luxury.

The Division's research department started life as the medicinal chemicals section of Dyestuffs Division 21 years ago. Eight chemists, led by MR. SAM ELLINGWORTH, bravely set out to discover new drugs in every field of medicine.

The chief difficulty then, as now, was to recognise a good new drug when they had made one. Lacking any biological facilities, they hopefully sent off new samples to Professor Browning at Glasgow, Professor Clark at Edinburgh or Professor Gunn at Oxford, according to the properties it was believed the compounds might possess.

Then they were joined by DR. A. R. MARTIN, a bacteriologist from the London School of Hygiene and Tropical Medicine. His premises were a single room in the semi-technical laboratory at Blackley.

* * *

The atmosphere seems to have been rather Harry Tate. Dr. Martin remembers trying to grow a certain mould in a converted Grinell drying stove. "After filling the trays with medium and vainly trying to seal the numerous gaps in the structure with silicate and asbestos," he says, "steam was blown in—and out—for several hours. When the stove had cooled down the trays were sown through a series of small and inconveniently placed holes, and then we waited for about a fortnight.

"When we opened the incubator we found only some patchy islands of mould growth in some trays and evil-smelling bacterial cultures in the others."

Honour for "Z"

FEW honours can have given greater pleasure to I.C.I. people in general and Billingham people in particular than the knighthood conferred on MR. A. T. S. ZEALLEY in the Birthday Honours List.

He was one of the Billingham pioneers back in the 1920s and became chairman of the Division before he was appointed to the I.C.I. Board.

Everyone at Billingham knew him as "Z." A genial, comfortably untidy figure who inspired good feeling, he never lost the gift of taking an interest in people.

When he retired from I.C.I. he went back to the house where he was born, at Colyton in south Devon. Two years ago he was appointed to the board of Remploy, the organisation which finds useful work for disabled people, and he is now chairman.

Opportunity Knocked

SOME people, even in I.C.I., think that opportunity never knocks at their door.

Mr. Sell

In 1931 a cargo of I.C.I. sulphate of ammonia became the subject of a dispute while the ship carrying it lay in Antwerp. Various people were asked if they would go over to Holland and look into this matter. Only one, a young man named EDWARD SELL, said he would like to go. After his return, and after his report, he found himself agricultural manager of the new London Area Sales Office.

Last month Mr. Sell retired from I.C.I. as Commercial Director of Central Agricultural Control, one of the world authorities on the movement and sale of nitrogen and a past president of the Fertilizer Manufacturers Association.

* * *

It was Mr. Sell, as agricultural manager of the old South Eastern Division, who did perhaps more than anyone else to establish concentrated complete fertilizers with the agricultural trade. He also had a great deal to do with the early and very hard selling of 'Nitro-Chalk.'

When Central Agricultural Control was formed in 1947 he was made a member of the original board, and in this capacity he began to have more and more to do with the Fertilizer Manufacturers Association, eventually rising to the presidency—the highest honour the trade in this country has to bestow.

Mr. Kevin FitzGerald, who was personal assistant to Mr. Sell from 1935 to 1939, adds an apt footnote:

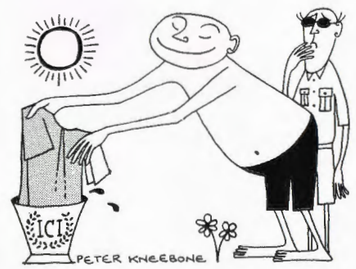
"When I first knew Edward Sell he was still on the British Sulphate of Ammonia Federation's staff. He had then, as on the day before his retirement, the untidiest desk ever seen by mortal man. Sack after sack of rubbish was being carted daily out of his room in Nobel House for weeks before he left. But his desk was never an indication of his mind, which was always one of the tidiest in the Company."

Thailand Blues

A DYESTUFFS Division technician on a visit to Thailand was demonstrating fabric printing with 'Alcian' Blue, an attractive fast turquoise dye.

Half-way through the demonstration he noticed that his supply of printing paste had disappeared. He eventually located it in the middle of a crowd of Thai workers, who had diluted the paste and were busy dipping their shirts in it.

The demonstrator, an enterprising man, strengthened up the dye liquor with fresh dye, and more eager dyers,



including some 2-year-olds, queued up to dip their shirts. They were advised to fix the colour with soda ash, and those who did so now form permanent perambulating advertisements for 'Alcian' Blue.

Drama in Grangetown

GRANGETOWN, in the heart of the heavy iron and steel industrial area of Tees-side, may not be the first place one would look for dramatic talent, but the fact remains that a Grangetown boys' club drama team, which included three Wilton employees, has emerged as the British Isles champions in the British Drama League's National Festival of Community Drama.

The team is the first from the North Country to win the Howard de Walden Cup for the British title and also carry off the John Maud Trophy for winning the English stage of the competition the same day.

The Wilton members of the team are MISS KATHLEEN GRANGE, a typist in Education Section, MR. LESLIE JONES, employed in the bookkeeping section of Accounts Department, and MR. KEN OLIVER, a quantity surveyors' measurer who works on the new nylon site.

The Lady from 'Alfloc'

DOUR Scottish engineers used to become even dourer when their engine-rooms were invaded by a woman representative of the Alfloc Water Treatment Service.

Miss Urlwin

Now, however, MISS MARGARET URLWIN has captured their confidence—to such a degree that she has been elected an Associate of the Institute of Marine Engineers. It is almost exclusively a male stronghold: Miss Urlwin is one of five ladies out of a total membership of several thousand.

Most of her work with the 'Alfloc' Service is at their London headquarters, but from time to time she visits shipyards and ships. 'Alfloc' customers include the Shell, Esso, B.P. and Caltex tanker fleets and the P. & O. and Union Castle liners.

Miss Urlwin has a strong liking for ships. But she has never been farther in one than across the Channel.

Number One

FEW Head Office people can be better known to I.C.I.'s overseas staff than MR. L. H. F. SANDERSON, who has just retired after 45 years' service. Since he was appointed Overseas Personnel Officer in 1948 he has visited *all* I.C.I.'s overseas establishments — most of them several times.

Mr. Sanderson

Paradoxically enough for a man who abandoned the idea of an army career to join Eley Bros. in 1912, he has since spent nearly twelve years at war—four and a half years with the Seaforth Highlanders in France during the first world war and over seven years on the General Staff during the second.

As the War Office representative on the Invasion Warning Committee in the last war he was the author of the official handbook containing the alarming secrets of the German preparations to invade. He spent 1941 in the uncomfortable knowledge that the invaders' route to London would pass his own front door in Surrey.

Later in the war he was still concerned with invasion, but this time with the planning of our own landings in North Africa and Normandy.

His pre-I.C.I. service with Bickford & Co. in Europe had given him a grounding in French, German, Spanish, Italian and Russian, which stood him in good stead when he came to interrogate prisoners.

* * *

Mr. Sanderson was No. 1 on the I.C.I. staff files. This curious distinction came about because he was secretary to Sir Harry McGowan when I.C.I. was formed in 1926. He still held this exacting job when he was recalled to the Army in 1939.

A witty and pungent conversationalist, he can talk with equally expert knowledge of the classics, cricket, Bach, Rugby or heraldry. He is a member of the M.C.C. and modestly claims to be able to count on every stumpy finger broken in his capacity as wicketkeeper the number of times he has reached double figures as a batsman. For twenty years he was on the Rugby Union's First Class list of referees and but for his failure to be domiciled in Scotland would probably have been on the International Panel.

Cheshire Talk

CHESHIRE people, particularly the older ones, have managed to retain a good deal of individuality in their speech, despite the B.B.C.

MR. CYRIL UNSWORTH, a process worker in the cell room at Rocksavage Works, makes a hobby of collecting quaint Cheshire terms. Here are some of his discoveries.

On weather: A gleamy day is a hot and showery one; a mizzlin is fine rain, a drabbly a steady one, a dumberdash a sudden heavy downpour.

On people: A clumsy person is a lomachin, a violent one is lungeous,

a cheekily mischievous one is gallus. Gafty means difficult or cunning.

On potatoes: Small pig potatoes are called chats; ker sprits are potatoes which have developed small additional tubers; and potato tops, believe it or not, are known as teetar wyzels.

Increase your Earning Power

THOSE of us who earn less than £1 million a year might follow the example of MR. WILLIAM SYKES.

Mr. Sykes, who is in the Commercial Department of Trafford Park Works, entered the new ITV "Criss-Cross Quiz." On the first programme he won £280. On the second he brought this up to £510 but was later floored by a Warrington journalist and his winnings were reduced to £460.

He consoled himself with this thought: earnings of £460 for one hour's work represent earnings at annual rate (and tax free) of £932,880.

The Price of Chivalry

THE *Colour of Chivalry*, a beautifully illustrated book on armour and heraldry published by I.C.I. in 1950, has now become something of a collector's item. A heraldry enthusiast found recently that the only second-hand copy of the book he could locate was priced at £8 8s.

CONTRIBUTIONS for this feature will be welcomed, and those accepted will be paid for.

Only 2000 copies of the book were printed. Most of them were presented to schools and universities for the use of students of medieval history.

The colour plates by Mr. Gerald Cobb originally appeared in a wartime series of I.C.I. advertisements.

NEWS IN BRIEF

TWELFTH MILLION. Huddersfield Works have completed a million accident free man-hours for the twelfth time.

LECTURE. Mr J. M. Buist of Dyestuffs Division delivered the twelfth foundation lecture of the Institution of the Rubber Industry.

DOG LOVERS. Mr. E. Fenton of Dyestuffs Division and Mr. J. Cropper of General Chemicals Division are chairman and secretary of a provisional committee for an association of I.C.I. dog-lovers.

U.D.C. CHAIRMAN. The works relations officer at Wilton, Mr. W. O. Cumming, was elected chairman of Saltburn and Marske U.D.C. He is also a J.P. for North Riding.

SYNTHONIA OCCASION. The reconstructed main hall of Billingham's Synthonia Club was opened by Sir Alexander Fleck last month.

NAMES FOR DIESELS. When diesels replace Billingham's steam locos they will be named after local dales.

C.I.L. SAFETY. York Paints Works in Toronto won the C.I.L. safety prize for the third successive time.

RUNCORN ORGANIST. Mr. J. Hayes, a plant manager at Gaskell-Marsh Works until he retired in 1954, completed 50 years as organist at the Bethesda Congregational Church, Runcorn.

C.C.F. FROM S.A.I. A new range of Concentrated Complete Fertilizers is being marketed by Scottish Agricultural Industries. They are made at a new £3 million plant at Leith.

GAS SEARCH. The I.C.I.–B.P. search for natural gas at Robin Hood's Bay, North Yorkshire, has been unsuccessful. Operations are being transferred to Sleights Moor on the Pickering–Whitby road.

LOCO RETIRED. Ardeer's No. 4 steam locomotive, built in 1916, has been sold.

FIREMEN. A Billingham team of volunteer firemen will compete in the national finals of the Industrial Fire Protection Association.

SEVERNSIDE PROJECT

The following notice was released by the Company for publication in the press:

Imperial Chemical Industries Ltd. are seeking permission from Gloucestershire County Council to develop a site of 1000 acres on the Severn, in the Thornbury Rural District, Gloucestershire, for the manufacture of organic and inorganic chemicals. If permission is granted, the total amount invested in developing the site between now and the mid-1970's may well be of the order of £100 million.

This ultra-modern chemical complex will employ the latest developments in chemical technology, and its plants will to a great extent rely on oil as their main raw material.

One of the factors influencing I.C.I. in their choice of the site has been the availability of good port facilities. Various oil products would be needed in large quantities for the operation of the processes planned. It is hoped that tankers of 30,000 tons capacity would bring oil direct from the oilfields and the refineries.

The new site will, in many respects, resemble I.C.I.'s Wilton Works in north Yorkshire, where already over £70 million has been spent since 1945 on the development of a complex of plants manufacturing products as diverse as 'Terylene' polyester fibre and raw titanium.

Most of I.C.I.'s existing installations for the manufacture of organic chemicals, including plastics, and ammonia products such as heavy industrial nitrogen chemicals and fertilizers, lie in the north of England. A large proportion of the consuming market is, however, in the Midlands and South. The new factory will be in a good position to supply this market. The site is favourably located for both road and rail distribution to the whole area.

Nevertheless, the planned capacity of the plants would be such as to permit a substantial part of total output being sold abroad. The direct and indirect contributions to Britain's exports, taken together, would be considerable because many of the products would serve as raw materials for other exporting U.K. industries.

As at Wilton, extensive use will be made of automatic control, so that productivity and capital investment per man employed will be high. The new works will therefore make a relatively small demand on the nation's manpower. It is estimated that the operating force in the 1970s will be between 4000 and 5000, and the capital employed per man between £15,000 and £20,000.

The Severnside site, like Wilton, will be a piece of modern industrial architecture whose appearance should in no way mar the natural surroundings and whose gradual expansion would greatly strengthen the local economy. Possession of the land needed for development will be programmed in phases; as a result, much of the land to be acquired will remain in agricultural use for some years.

NEW APPOINTMENTS

Some recent appointments in I.C.I. are:

Billingham Division

Dr. R. A. Fairclough. Personal assistant to Mr. W. D. Scott.

Dyestuffs Division

Mr. A. G. Rees. Manager, Work Study Dept.

General Chemicals Division

Mr. A. F. C. Speyer. Joint Commercial Director.

Dr. V. G. Cove. Division Labour Manager.

Head Office

Mr. R. L. Bewick. Assistant Sales Controller (Personnel).

Mr. P. R. Sandars. Overseas Personnel Officer.

Severnside Project

Dr. H. G. Reid. General Manager.

Mr. J. D. Cousin. Secretary.

The Regions

Mr. D. R. Mackay. Manager, Scotland and Northern Ireland Region.

OBITUARY

Dr. F. T. Meehan

We regret to announce the death on 2nd July of Dr. F. T. Meehan, a former chairman of I.C.I.A.N.Z.

Dr. Meehan joined Caster-Kellner Works in 1930 and spent nearly twelve years with General Chemicals Division, the last four mainly on the project which is now the chlorine factory of Finnish Chemicals O/Y at Aetsa.

His first job on being seconded to Australia was to supervise the building of the Botany factory. He was appointed to the board of I.C.I.A.N.Z. in 1946, later being made joint managing director and finally chairman.

In 1953 he resigned this position on account of ill health, but continued as a member of the board and a technical consultant.

MISSION TO MOSCOW (*continued from page 263*)

other workers in particularly arduous or unpleasant conditions it was 50 for men and 45 for women. The retirement pension was stated to be 50% of the worker's earnings over his last working year or over any consecutive five-year period of his working life, at the choice of the worker.

One striking feature of the Russian plants, and indeed of the Russian scene as a whole, was the employment of women on equal terms with men.

There is a very wide range of jobs done by women. These vary from heavy manual work on roads and building sites to senior technical positions in factories and laboratories. The captain of the river steamer on which some of our party sailed was a woman.

The city streets were extremely clean; they were washed twice a day to keep down the dust and kept tidy by armies of women street cleaners armed with besoms.

One of the surprising experiences to Westerners in Russia is to see in hotel restaurants, in the theatres and elsewhere a strange mixture of all types, from worker to minister, in juxtaposition. It seems to be the result of a classless society in which anyone can go anywhere or buy anything, and will if he has the money. As in America, it is the income bracket which matters. Incomes and incentives are highly geared, and the maximum rate of income tax is only 13%. We found later that other things matter too, such as official status. It would be difficult to imagine British workers, however much money they had in their pockets, going to the ballet or, for that matter, to the Savoy.

There is little doubt but that the standard of living and accommodation for workers is lower than in Britain, but people who were in Moscow ten years ago consider that the improvement since that time has been remarkable. For example, behind Moscow University a new township of huge flats is rising, great cranes are everywhere, and building goes on right through the winter. Certainly the contrast between the old wooden dwelling houses, most of them decrepit and mere hovels, and the new buildings which are replacing them is most remarkable.

One of the most interesting aspects of our visit was the opportunity it gave us for really close contacts with Soviet technocrats, and we got to know some of them extremely well. We found them to be competent, informed and virile, and in point of intelligence and general mental equipment they were in no sense inferiors of their counterparts in Western Europe. I think they are still in the imitative stage, but are doing it with vigour and imagination, adding their own contribution. It is quite evident that great efforts are being made to bring the factories fully up to date and to introduce the latest equipment. One thing is certain —that the U.S.S.R. non-ferrous metals industry is both competent and aggressive and is very capable of planning and implementing future requirements. They have the brains and the resources and will exploit them to the full.

In our view there has emerged a technical management class similar to that in I.C.I., a class which is becoming more and more influential. These men are well educated and, together with the scientists, form a rapidly increasing body of people who need the stimulus of personal contacts and interchange of views with technical people abroad.

At the present time there is a great potential fund of good will to their fellows in other countries, and I think we ought to take advantage of this climate of opinion to promote interchange of visits and experience, with the object of demonstrating to the Russians what the West has to offer and promote the inevitable evolution of ideas which such interchanges engender. I believe too it would be to the advantage of the West to promote what trade we can.

I should perhaps add that our mission was in response to a Soviet non-ferrous metals mission which came to Britain last January under the leadership of Mr. Komarov and visited two I.C.I. factories among others. This Mission particularly appreciated the discussions with our technical people, and considered our factories to be good, particularly Kirkby, which in their opinion was outstanding. They wished to return the hospitality and invited an I.C.I. mission to see typical Soviet factories.

On Entertaining a Very Young Lady

By Courtenay Blackmore

Illustrated by Michael Leonard

YOUNG men, particularly naval officers, never enjoy being "stood up" for a date, but one has learned to accept it philosophically. On this particular occasion, as no doubt on many another, it was a blessing in disguise.

Why our friends in the W.V.S. were not on the Kowloon ferry we never did discover. After the immediate aggravation had blown over and we had abandoned the usual impractical and facetious suggestions, we were faced with the very real problem of an excellent dinner without guests in the guest room of our palatial mess on Robinson's Road.

Disconsolately we were about to go back in our jeep when one of us had a brainwave: "Why not ask Bebe Dun? The poor child probably hasn't had a decent meal for months!"

Like most brainwaves it was of course quite crazy, and on the face of it there was every reason why Bebe Dun should not come to dinner. Perhaps this was sufficient reason for us to invite her.

Bebe Dun will be remembered by many officers who were in Hong Kong in those days. An orphan, she was about eleven years old, with a sweet oval face and big deep sad almond eyes which seemed to reflect all the tragedy, agelessness and beauty that are China. In her ragged blue pyjamas she used to sell peanuts, firecrackers and those fascinating paper snakes on the officers' boat jetty. Her parents were said to have been killed by the Japanese and she appeared to be in the care of a convent. Nonetheless this did not prevent her having to work late each night on the waterfront, selling her wares.

Alan, from one of the destroyers, had found her first, and to our intense chagrin he remained her firm favourite while we were there. Her generosity to us, and to him in particular, had got her into trouble with the other children on the waterfront, and she had in fact been beaten up not long before by some of them for *giving* us peanuts. Our relations had been rather more aloof since this unfortunate episode, and we were somewhat apprehensive about inviting her. But men in extremes will abandon all scruples.

Bebe Dun accepted the invitation calmly, handed her snakes to a companion and climbed into the jeep. She was silent but quite at ease while we drove through the milling streets, past the endless food stalls whose wares smelt appetising but were of doubtful calorific value; past woodcarvers and silversmiths working in the half light, while in the background of every shop sat the ubiquitous grandmother eternally sipping tea.

The streets, which in the city were a blaze of light from shops, open apartment windows and incongruous neon signs flashing their message in Chinese characters, soon gave way to quiet tree-lined roads as we drove up by Government House and caught glimpses of the sparkling fairyland below. In a few minutes we were in the anteroom of our sedate mess and Bebe Dun was sipping lemon squash while we drank our pink gins and martinis.

The Chinese "boys" were thrilled to find her our guest, and each took a turn to stand behind her chair and act as interpreter.

No society socialite could have been more at ease—she was not remotely shy, nor did she show off as any British child of her age might well have done when dining formally in a service mess. When we sat down to dine she chose chopsticks instead of knives and forks, but this did not impede her when eating European food. Each course was accepted as if her favoured dish.

. . . chopsticks instead of knives and forks . . . did not impede her when eating European food.

For our part, our manners were sternly tested. An attempt to help oneself to salt before being offered it was met by a solemn frown. And our guest insisted on the elegant sipping of coffee from a coffee spoon, which, while no doubt the acme of bonne société, ensured that the coffee was disgustingly tepid.

Bebe Dun was blissfully unaware of the mild consternation these innovations caused and chatted happily away to her hosts with the aid of enthusiastic interpreters. So the meal was enjoyed in a most leisurely manner, each of us striving to outdo the others in practising our guest's code of manners. One wondered whether there were any ends to which a man would not go to win a smile from this fair lady.

After dinner we sat at ease talking of ships and shoes and sealing wax over our whiskies and soda, while our guest enjoyed yet another iced lemon squash. The one surprising touch of informality was an ever-growing pile of peanut shells by Bebe Dun's chair. For no sooner had we settled down than a large cloth bag was produced and she insisted on feeding us with what must have been her entire stock for her evening's trading.

Then, choosing her moment to perfection, she announced that it was time to leave, and asked if we would drive her not home but back to work on the jetty.

The staff were thanked and we were once more in the jeep, twisting and turning down the tortuous road to the waterfront. Only then did she become a child again—giving us firecrackers and laughing gaily as we disturbed sedate merchants when we tossed the squibs under their sedan chairs or rickshaws. It did not take us long to become expert at lobbing our effective if harmless weapons at any such enticing targets, and many a blissful dream must have been disturbed.

In so far as she could control her laughter, Bebe Dun was an enthusiastic leader of these exploits, but we quickly learned not to go too far—for when I saved up the last two crackers to disturb the peace of the sentries at the army barracks I immediately had them confiscated. "You sailors are good, but so are the soldiers; it is bad to annoy them while they work."

"Siesta"

Photo by John Doidge